UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,424	09/08/2000	Changming Liu	09725-005001	2970

44987 7590 08/09/2006		**EXAMINER**
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ART UNIT	PAPER NUMBER
2143	

SUITE 600
FAIRFAX, VA 22030

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/658,424	LIU ET AL.
	Examiner	Art Unit	
	David E. England	2143	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 April 2006</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-22</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-22</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)		4)☐ Interview Summary (PTO-413)	
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)		Paper No(s)/Mail Date. _____.	
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)		5)☐ Notice of Informal Patent Application (PTO-152)	
Paper No(s)/Mail Date _____.		6)☐ Other: _____.	

DETAILED ACTION

1.   Claims 1 – 22 are presented for examination.

Claim Objections

2.   Claim 1 is objected to because of the following informalities: The last limitation has the

word "buck"; it will be assumed as a misspelling and be viewed as "bucket". Appropriate

correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1, 5, 6 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Iverson

et al. (6052379) (hereinafter Iverson).

5.   Referencing claim 1, as closely interpreted by the Examiner, Iverson teaches a method

for allocating bandwidth in a network appliance where the network appliance includes a plurality

of guaranteed bandwidth buckets used to evaluate when to pass traffic through the network

appliance, the method comprising:

6.   providing a shared bandwidth bucket associated with each of the plurality of the

guaranteed bandwidth buckets, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19);

7.   allocating bandwidth to the shared bandwidth bucket based on the underutilization of

bandwidth in any one of the plurality of guaranteed bandwidth buckets, (e.g. Abstract, Fig. 10 &

col. 17, line 56 – col. 18, line 19);

8.   determining whether bandwidth in one or the plurality of guaranteed bandwidth buckets

is sufficient to allow traffic to pass immediately through the network appliance, (e.g. Abstract,

Fig. 10 & col. 17, line 56 – col. 18, line 19); and

9.   transferring bandwidth from the shared bandwidth bucket to one of the plurality of

guaranteed bandwidth buckets when it is determined that bandwidth in one of the plurality of

guaranteed bandwidth buckets is not sufficient to allow traffic to pass immediately through the

network appliance, (e.g. Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19).

10.   Referencing claim 5, as closely interpreted by the Examiner, Iverson teaches each

guaranteed bandwidth bucket is associated with a traffic shaping policy, (e.g. col. 17, line 56 –

col. 18, line 19, *"leaky bucket"*).

11.   Referencing claim 6, as closely interpreted by the Examiner, Iverson teaches a plurality

of guaranteed bandwidth buckets are associated with a single traffic shaping policy, (e.g. col. 17,

line 56 – col. 18, line 19, *"leaky bucket"*).

12.   Claim 14 is rejected for similar reasons as stated above.

Claim Rejections - 35 USC § 103

13.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

14.   The text of those sections of Title 35, U.S. Code not included in this action can be found

in a prior Office action.

15.   Claims 2, 3, 7 – 11, 13 and 15 – 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Iverson as applied to claims 1 and 5 above, and in view of Ho (6862270).

16.   As per claim 2, as closely interpreted by the Examiner, Iverson teaches a shared

bandwidth bucket but does not specifically teach tokens in the bucket. Ho teaches tokens in a

bucket, (e.g. col. 11, lines 30 – 44, *"token bucket"*). It would have been obvious to on of

ordinary skill in the art at the time the invention was made to combine Ho with Iverson because

tokens can be allocated as a set rate, example 1 token equaling 1 kilobyte, which could aid in

classifying packets to a type of service or priority given, by the amount of tokens guaranteed to

the packet.

17.   As per claim 3, as closely interpreted by the Examiner, Iverson teaches a guaranteed

bandwidth bucket but does not specifically teach tokens in the bucket. Ho teaches tokens in a

bucket, (e.g. col. 11, lines 30 – 44, *"token bucket"*). It would have been obvious to on of

ordinary skill in the art at the time the invention was made to combine Ho with Iverson because

of similar reasons stated above.

18.   As per claim 7, as closely interpreted by the Examiner, Iverson teaches a traffic shaping

policy but does not specifically teach a policy based on IP address.

19.   Ho teaches a policy screens based on IP address, (e.g. col. 12, lines 40 – 62, *"parameters*

such as... IP Source Address"). It would have been obvious to one of ordinary skill in the art, at

the time the invention was made, to combine Ho with Iverson because it would be more

beneficial in certain situations, for example where low-priority traffic in one LAN group flow is

protected form high-priority traffic in a misbehaving (not conforming to specified flow spec)

flow when both flows are forwarded through the same wan group/VC.

20.   As per claim 8, as closely interpreted by the Examiner, Iverson teaches a traffic shaping

policy but does not specifically teach a policy based on source IP address.

21.   Ho teaches a policy based on source IP address, (e.g. col. 12, lines 40 – 62, *"parameters*

such as... IP Source Address"). It would have been obvious to one of ordinary skill in the art, at

the time the invention was made, to combine Ho with Iverson because of similar reasons stated

above.

22.   As per claim 9, as closely interpreted by the Examiner, Iverson teaches a traffic shaping

policy but does not specifically teach a policy based on destination IP address.

23.   Ho teaches a policy based on destination IP address, (e.g. col. 12, lines 40 – 62,

"parameters such as... IP Destination Address"). It would have been obvious to one of ordinary

skill in the art, at the time the invention was made, to combine Ho with Iverson because of

similar reasons stated above.

24.   As per claim 10, as closely interpreted by the Examiner, Iverson teaches a traffic shaping

policy but does not specifically teach a policy based on protocol type.

25.   Ho teaches a policy based on protocol type, (e.g. col. 12, lines 40 – 62, *"parameters such

as... IP protocol"*). It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to combine Ho with Iverson because of similar reasons stated above.

Furthermore, to would be more efficient for a system that processes specific data protocols to

filter the data based on protocol type before the data reaches the processor.

26.   As per claim 11, as closely interpreted by the Examiner, Iverson teaches a traffic shaping

policy but does not specifically teach a policy based on UDP/TCP port number. Ho teaches a

policy based on UDP /TCP port number, (e.g. col. 12, lines 40 – 62, *"parameters such as...

TCP/UDP Destination Port Start"*). It would have been obvious to one of ordinary skill in the

art, at the time the invention was made, to combine Ho with Iverson because it would be more

efficient for a system to utilize a widely use protocol that most system use than have different

protocols that a foreign network is unfamiliar with and will not be able to understand the

packet's format.

27.   As per claim 15, as closely interpreted by the Examiner, Iverson in combination with Ho

teach all that is similar above in claim 1 as applied to claim 15, Ho further teaches a scheduler

operable to

28.   evaluate a packet to determine if a traffic shaping policy should be applied to a given

packet, (e.g. col. 12, lines 15 – 40, *"QME, FCE, FSE"*),

29.   evaluate a guaranteed bandwidth bucket associated with an identified traffic shaping

policy, (e.g. col. 12, lines 15 – 40, *"QME, FCE, FSE"*), and Iverson teaches determine when the

guaranteed bandwidth bucket associated with an identified traffic shaping policy has insufficient

capacity to support a transfer of the packet through the network, (e.g. Abstract, Fig. 10 & col. 17,

line 56 – col. 18, line 19), and

30.   borrow bandwidth from the shared bandwidth bucket by a respective guaranteed

bandwidth bucket to allow traffic to pass immediately through the network appliance, (e.g.

Abstract, Fig. 10 & col. 17, line 56 – col. 18, line 19). It would have been obvious to on of

ordinary skill in the art at the time the invention was made to combine Ho with Iverson because

of similar reasons stated above.

31.   As per claim 16, as closely interpreted by the Examiner, Iverson teaches a network device

comprising:

32.   a first bucket configured to receive bandwidth at a first information rate, (e.g. col. 17, line

41 – col. 18, line 20, *"CIR"*);

33.   a second bucket configured to receive bandwidth at a second information rate, (e.g. col.

17, line 41 – col. 18, line 20, *"bucket 402"*);

34.   a third bucket configured to receive extra bandwidth from the second bucket, (e.g. col.

17, line 41 – col. 18, line 20, *"bucket 404", "BpEsum is the water level value in the second*

bucket 404 and represents the current accumulated value of unused bandwidth in excess of

CIR+B_c (i.e. past overflows from the first bucket 402)."); and

35.   a scheduler configured to:

36.   determine if a size of traffic received at the network device exceeds a bandwidth stored in

the first bucket, (e.g. col. 17, line 41 – col. 18, line 20),

37.   determine, when the size of the traffic does not exceed the bandwidth stored in the first

bucket, if a size of the traffic exceeds a bandwidth stored in the second bucket, (e.g., col. 18, line

32 – col. 19, line 27), and

38.   transfer, when the size of the traffic exceeds the number of tokens stored in the second

bucket, and appropriate number of tokens from the third bucket to the second bucket so that the

second bucket includes a number of tokens that equals or exceeds the size of the traffic, (e.g.,

col. 18, line 32 – col. 19, line 27). Iverson does not specifically teach the use of tokens. Ho

teaches the use of tokens in buckets and refreshing said tokens, (e.g. col. 11, lines 30 – 44,

"token bucket"). It would have been obvious to on of ordinary skill in the art at the time the

invention was made to combine Ho with Iverson because of similar reasons stated above.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to have a plurality of guaranteed bandwidth buckets, (first, second, third

bucket), since it has been held that mere duplication of essential working parts of a device

involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

39.   As per claim 17, as closely interpreted by the Examiner, Iverson teaches

40.   causing the traffic to be forwarded after the transfer, (e.g. col. 17, line 56 – col. 18, line

19);

41.   decrement the bandwidth in the first and second buckets based on the size of the traffic,

(e.g., col. 18, line 32 – col. 19, line 27). Iverson does not specifically teach the use of tokens. Ho

teaches the use of tokens in buckets and refreshing said tokens, (e.g. col. 11, lines 30 – 44,

"token bucket"). It would have been obvious to on of ordinary skill in the art at the time the

invention was made to combine Ho with Iverson because of similar reasons stated above.

42.   As per claim 18, as closely interpreted by the Examiner, Iverson in combination with Ho

teach all that is similar above in claims 1 – 3, 7 – 11 and 15 – 17 as applied to claim 17,

furthermore, Iverson teaches determine if the third bucket includes the appropriate amount of

bandwidth, and prohibit the traffic from being forwarded when the third bucket includes less

than the appropriate amount of bandwidth, (e.g. col. 18, line 32 – 41). Ho teaches that the

buckets contain tokens, (e.g. col. 11, lines 30 – 44). It would have been obvious to on of ordinary

skill in the art at the time the invention was made to combine Ho with Iverson because of similar

reasons stated above. Furthermore, it would be obvious to anyone skilled in the art that in

transmitting information utilizing token buckets, that if a bucket is void of the required tokens,

and there is no other backup source to receive more tokens than it is not possible to transmit a

message because all resources are used up and the system would have to wait till the recourses

were available to transmit said message.

43.   As per claim 19, as closely interpreted by the Examiner, Iverson teaches one or more

input ports configured to receive traffic from a network, each of the one or more input ports

including the first bucket, the second bucket, the third bucket, (e.g., col. 2, lines 64 – 67 & col.

17, line 56 – col. 18, line 19), and Ho more specifically teaches the scheduler, (e.g. col. 12, lines

15 – 40).

44.   Claims 13 and 20 – 22 are rejected for similar reasons as stated above.

45.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson as applied

to claim 1 above, and in view of Applicant's admitted prior art.

46.   As per claim 4, as closely interpreted by the Examiner, Iverson does not specifically

teach the guaranteed bandwidth buckets are credit/debit buckets. Applicant's admitted prior art

suggests the use of credit/debit buckets being a modified type of token buckets, (e.g. page 2). It

would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine the Applicant's admitted prior art with Iverson because using credit/debit buckets

instead token buckets give the system more versatility that token buckets cannot perform, (i.e.

credit/debit tokens bucket can be negative).

47.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson and Ho

as applied to claims 1 & 5 above, and in further view of Chiruvolu (6839321).

48.   As per claim 12, as closely interpreted by the Examiner, Iverson and Ho do not

specifically teach the traffic shaping policy screens based on the type of service requested.

49.   Chiruvolu teaches the traffic shaping policy screens based on the type of service

requested, (e.g. col. 6, lines 19 – 35). It would have been obvious to one of ordinary skill in the

art at the time the invention was made to combine Chiruvolu with the combine system of Iverson

and Ho because it would be more efficient for a system to give priority to users that has a higher

type of service as indicated by their priority bit therefore, meeting the requirements of a

guaranteed quality of service.

Response to Arguments

50.   Applicant's arguments filed 02/21/2006 have already been fully considered in an

Advisory Action dated 04/18/2006 and entered and are still not persuasive.

Conclusion

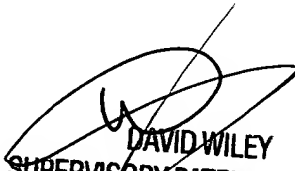Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. England whose telephone number is 571-272-3912. The examiner can normally be reached on Mon-Thur, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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